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C-terminus of transcription factor TnrA from Bacillus subtilis controls DNA-binding domain activity but is not required for dimerization

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Abstract

The transcription factor TnrA, which belongs to the MerR transcription regulators, in Bacillus subtilis controls genes of nitrogen metabolism during nitrogen limiting conditions. As all the DNA-binding proteins, it is active as a dimer in cells, but the dimerization site is still unknown. The multiple alignment of TnrA homologs from other Bacilli allowed to identify the putative dimerization sites. Using the C-terminal truncated TnrA proteins it is established, that, in contrast to other MerR-proteins, the TnrA C-terminus does not participate in dimerization. Surface plasmon resonance has revealed that C-terminus truncations of TnrA do not inactivate its DNA-binding activity. Contrary, increased the affinity towards DNA, confirming that C-terminus controls the DNA-binding activity in a full-length TnrA.

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Keywords

Bacillus subtilis, dimerization, transcription factor TnrA